

Application No. 10/516,353  
Amendment dated August 16, 2007  
Reply to Office action of April 18, 2007

## **AMENDMENTS TO THE DRAWINGS**

The attached sheet(s) of drawings includes changes to Fig. 9. This sheet, which includes Fig. 9, replaces the original sheet including Fig 9.

Attachment:           Replacement Sheet(s), 1 page  
                          Annotated Sheet(s) Showing Changes, 1 pages

## REMARKS

By this Amendment, claims 1, 4-12, 14, and 18-20 have been amended, claims 2 and 3 have been canceled. The subject matter of claim 2 and 3 has been added to claim 1. The amendments to claims 4-12 and 14 are for stylistic purposes to bring the language in line with United States Patent practice. Claims 13 and 15-17 were previously canceled in accordance with a restriction requirement. Accordingly, claims 1, 4-12, 14, and 18-20 (14 claims) are pending in the application. Also, drawing figure 9 and the corresponding portions of the specification have been amended to include the cooling means **40** of claim 11, and the manometer **42** of claim 14. The lead line and reference number for opening **31** have been moved. The specification has also been minimally modified to correct spelling and/or usage issues thus far unnoticed. No new matter has been added herewith.

### *Drawing Objections*

The Examiner objected to the drawings for failing to show certain claimed elements, namely cooling means and a manometer. The Examiner will note that sheet 8 of 14, showing Figure 9, has been amended to include a representation of cooling means, indicated by element 40, as well as a manometer 42.

The specification has been amended as minimally as possible to include reference to cooling means 40 and manometer 42. It is believed that such amendments overcome the objection without adding new matter.

### *Claim Rejections – (35 U.S.C. § 112, ¶ 2)*

The Examiner rejected claims 1-12, 14, and 18-20 under 35 U.S.C. 112, 2<sup>nd</sup> paragraph as being indefinite. The Examiner stated that the phrase “sieve-like” in claims 1-6 renders the claims indefinite because the claims include elements not actually disclosed (i.e., those covered by “the like”). Further, the Examiner stated that claim 20 is directed to a use of the device of claim 1 without reciting steps in a process, and hence indefinite.

The Examiner will note that claims 1-6 have been amended to remove the phrase “sieve-like,” and claim 20 has been amended both to depend from claim 18, itself a process claim, and to positively recite concrete process steps. Based on the foregoing, it is submitted that the noted

claims are clear and definite, and Applicant requests the withdrawal of the indefiniteness rejections.

***Claim Rejections – 35 U.S.C. § 101***

The Examiner next rejected claim 20 under 35 U.S.C. 101 for lack of utility, as not being a proper process claim because it fails to set forth steps involved in the process.

Applicant refers the examiner to the discussion of the amendments to claim 20, above. Hence, it is believed the rejection under section 101 is rendered moot.

***Claim Rejections – 35 U.S.C. § 103(a) (Curtis)***

Claims 1, 2, 7, 10, 12, and 18-20 are rejected under 35 U.S.C. 102(b) as anticipated by over Curtis, U.S. 4,067,696, (“Curtis”), referring to Figs. 5, 7, and 8, and column 4, lines 1-28.

Curtis utterly fails to disclose all elements of the rejected claims, as amended. First, the Examiner will note that claim 1 has been amended to include the subject matter of claims 2 and 3 (the latter claims being canceled herein). Claim 3 as previously written was not rejected under section 102 over Curtis. On this basis alone, claim 1, as amended, is novel over Curtis. Further, claim 1 has also been amended to include the limitation “wherein at least one of the means for supplying the gas and the means for supplying the fluid comprises tubular perforated output portions.” The limitation “tubular” can be found in the brief description of the drawings, especially of Figures 9-12. The corresponding text is found at page 16, line 33 to page 17, line 20. Curtis fails to disclose or suggest a tubular output portion on either the gas supply means or the fluid supply means. For this reason also, claim 1, as amended, is novel, and hence patentable over Curtis. The rejection of claim 2 is moot as it has been canceled herein. As they depend from claim 1, all other claims rejected hereunder (7, 10, 12, and 18-20) are believed to be patentable for the same reasons as claim 1 is patentable. The Examiner is invited to revisit the basis for the rejection and withdraw the same.

***Claim Rejections – 35 U.S.C. § 103(a) (Curtis/Hirose)***

Claims 3, 4, 8, 9, and 11 stand rejected under 35 U.S.C. 103(a) over Curtis, U.S. 4,067,696, (“Curtis”) in view of Hirose et al., U.S. 4,869,849, (“Hirose”). The Examiner contends that the portions of Curtis cited above “substantially disclose[] applicant’s invention as

recited by instant claims 3, 4, 8, 9, and 11. The Examiner admits that Curtis fails to disclose perforated plates having different sized perforations on alternating plates, and the device being construction from a specific steel material and cooling means.

The Examiner contends that Hirose discloses a fluid mixing apparatus similar to that of Curtis having alternating plates with perforations of different sizes to aid in fluid mixing. The Hirose device is made of metal and has cooling channels. The Examiner concludes that it would have been obvious to modify the plates of Curtis with differently sized perforations of Hirose to mix the fluids therein. The Examiner further concludes that the use of a metallic, cooled casing of Hirose in the device of Curtis would have been obvious. Further still, the Examiner lends no patentable weight to the metals recited in claims 8 and 9, since assertedly any metal can be used, and use of a known material based on suitability for a particular purpose is evidence of obviousness.

The Examiner will note that claim 3 has been canceled and its subject matter incorporated into claim 1. Additionally, as discussed above, claim 1 includes the limitation "tubular." Hirose is "similar to Curtis" inasmuch as it fails to disclose a tubular fluid inlet means or tubular gas inlet means. Hirose discloses a device to mix a gas with a fluid including a cylindrical body containing stacked pressure plates therein, where the plates have large and small holes (column 1, lines 45-48). There is no disclosure of a perforated tubular gas or fluid inlet portion. Hence the cited combination fails to disclose the limitation "tubular." The remaining claims (4, 8, 9, and 11) all have been amended to depend from claim 1. For the same reasons that claim 1 is patentable over the combination of Curtis and Hirose, it is believed that claims 4, 8, 9, and 11 are similarly patentable, and notice to that effect is respectfully requested.

***Claim Rejections – 35 U.S.C. § 103(a) (Curtis/Lockey or Seidel or Rubin)***

The Examiner rejected claims 5 and 6 under 35 U.S.C. 103(a) over Curtis in view of any of Lockey, U.S. 2,176,558, or Seidel, U.S. 2,305,796 or Rubin, U.S. 2,637,541 each individually. Beginning with the Examiner's contentions about the disclosures of Curtis, above, the Examiner admits that Curtis fails to disclose a multi-layer tubular device with different sized perforations that serves as a gas inlet. Accordingly, the Examiner cites Lockey, Seidel and Rubin, contending that they each individually disclose a gas inlet means into a gas/fluid mixing device, where the gas passes through multiple layers having different sized perforations into the mixing chamber.

Initially, the Examiner will note that claims 5 and 6 have now been amended to depend from claim 1. None of the cited references discloses that the means for supplying the gas and/or fluid to the mixing container is tubular or perforated. Further, Seidel fails to disclose perforation altogether, and fails to disclose a means for supplying a gas with a tubular perforated output portion. Lockey discloses a fluid inlet having an inner pipe with multiple perforations, the inner pipe covered by a second pipe having a concentrically wound slit. Lockey fails to disclose a plurality of differently sized perforations as instantly claimed. Rubin discloses perforated aerating devices having a trapezoidal cross section, and the material which aerates the fluid is porous, not perforated. Hence, there is no disclosure of differently sized perforations.

In sum, none of Lockey, Seidel, nor Rubin supplies the limitations missing from Curtis required to support the Examiner's rejection. Withdrawal of the same is respectfully requested.

*Claim Rejections – 35 U.S.C. § 103(a) (Curtis/Smith)*

Finally, claim 14 is rejected under 35 U.S.C. 103(a) over Curtis in view of Smith, U.S. 824,956. Beginning with the disclosures of Curtis, above, the Examiner admits that Curtis fails to disclose a manometer. Accordingly, the Examiner cites Smith as disclosing a manometer on a gas/liquid mixing device similar to that of Curtis, including a manometer for regulating the pressure difference between the gas and liquid within the device. The Examiner concludes the modification of Curtis with the manometer of Smith would have been obvious.

The Examiner is referred to the discussion of the patentability of claim 1 over Curtis, above. Claim 14 depends from claim 1, by now well established to be patentable over Curtis. Smith fails to disclose all of the claimed limitations missing from Curtis. In particular, the gas supply means of Smith is pipe *c*, ending in rose *d*. There is no manometer associated with those elements. The Examiner cites element *h*, a simple pipe extending from the liquid out to open air as a manometer. It is not connected to, or associated with the gas supply means, pipes *e*. Hence, the limitation "wherein the means for supplying the gas includes a manometer," is not met by Smith, and hence not met by the combination of Smith with Curtis. The Examiner is invited to revisit the basis for the rejection, and respectfully requested to withdraw the same.

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In light of the foregoing, it is respectfully submitted that the present application is in a condition for allowance and notice to that effect is hereby requested. If it is determined that the application is not in a condition for allowance, the Examiner is invited to initiate a telephone interview with the undersigned attorney to expedite prosecution of the present application.

If there are any additional fees resulting from this communication, please charge the same to Deposit Account No. 18-0160, Order No. GIL-15763.

Respectfully submitted,

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